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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,034	10/21/2003	Alain Blosse	244320US77CONT	4489
22850	7590	04/13/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			VINH, LAN	
			ART UNIT	PAPER NUMBER
			1765	
DATE MAILED: 04/13/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/689,034	Applicant(s) BLOSSE ET AL.	
	Examiner Lan Vinh	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>111703, 092704</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 1, 2, 5-18 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-16 of prior U.S. Patent No. 6,635,566. This is a double patenting rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 2, 5-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Schnabel et al (US 6,544,951) in view of Lucas et al (US 6,287,951)

Schnabel discloses a method for forming a DRAM. This method comprises the steps of:

etching an opening/trench dielectric layer 225B of a gate/composite structure (col 8, lines 4-6)

the gate/composite structure comprises in order :a semiconductor substrate comprising an active region, a gate structure thereover and dielectric spacers adjacent to said gate structure (col 7, lines 45-53)

a substantially planar contact dielectric layer 225A (fig. 3)

a trench dielectric layer 225 B (col 7, lines 62-63)

a patterned mask /photoresist (col 8, lines 52-53)

forming a contact opening mask (col 8, lines 56-60)

etching the substantially planar contact dielectric layer 225A under conditions which do not substantially damage said gate structure to form a first contact opening 24 that exposes a region of said semiconductor substrate and a portion of at least one of said dielectric spacers (col 8, lines 1-5)

depositing a conductive material into said first contact opening 24 and the trench formina a contact structure in said first contact opening and a metallization in the trench (col 8, lines 19-24; fig. 7)

Unlike the instant claimed invention as per claim 1, Schnabel fails to disclose the step of removing the patterned photoresist

Lucas discloses a process for forming a semiconductor device comprises the step of removing the patterned photoresist after an etching step (col 6, lines 55-58)

Thus, one skilled in the art at the time the invention was made would have found it obvious to modify Schnabel's method by adding the step of removing the patterned photoresist as per Lucas because Lucas teaches that the removal of the photoresist improves the quality of the subsequent etch processing steps (col 6, lines 65-67)

Unlike the instant claimed inventions as per claims 8, 12, 13-15, Schnabel fails to disclose the thickness of the liner, forming a an interlayer dielectric over the coplanar conductive material and forming an ARC layer between the trench dielectric and the photoresist

Lucas also discloses the steps of forming a liner 20 having a thickness (col 4, lines 1-5), forming an interlayer dielectric 94 over the coplanar conductive material (col 8, lines 45-48) and forming an organic ARC layer between the trench dielectric and the photoresist (col 5, lines 64-66)

One skilled in the art at the time the invention was made would have found it obvious to modify Schnabel's method by forming the liner, an interlayer dielectric over the coplanar conductive material and forming an ARC layer as per Lucas because Lucas discloses that if necessary, a hardmask/liner, an ARC and an adhesion/interlayer insulating layer can be used in conjunction with the dielectric layer to form the opening for the vias (col 8, lines 45-48)

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Regarding claim 2, Schnabel discloses forming a second contact opening 32 in said trench dielectric layer corresponding to said first contact opening (fig. 8)

Regarding claim 5, fig. 8 shows that layer 225B/trench dielectric layer having a thickness.

Regarding claim 6, Schnabel discloses selectively etching the contact/opening relative to the gate structure (col 8, lines 4-6)

Regarding claims 7, 9, Schnabel discloses forming a liner/barrier layer of TiN in the first contact opening and the trench (col 9, lines 10-14)

Regarding claim 10, Schnabel discloses forming the conductive layer of tungsten (col 9, lines 9-11)

Regarding claim 11, Schnabel discloses the step of further comprising removing said conductive material until its uppermost surface is substantially coplanar with an uppermost surface of the trench dielectric layer (fig. 3)

Regarding claims 16-18, Schnabel discloses forming the dielectric layer of BPSG (col 7, lines 62-63; col 9, lines 4-5)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471.

The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'LV', with a stylized, flowing script.

LV
April 2, 2005